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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
CHOWDHURY, AFROZA Y				
ART UNIT		PAPER NUMBER		
2629				
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/528,416

Applicant(s)

KAWAGUCHI ET AL.

Examiner

AFROZA Y. CHOWDHURY

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/1/2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/55/ICE)
Paper No(s)/Mail Date 5/20/07, 10/30/07, 8/1/08
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on **August 1st, 2008** has been entered. Claims 1-30 are currently pending. Applicant's amended claim and argument addressed herein below.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 30 are rejected under 35 U.S.C. 102(b) as being unpatentable by **Hattori et al.** (US Pub. 2001/0020925).

As to claim 1, Hattori et al. discloses a liquid crystal display apparatus comprising:

a liquid crystal layer (figs. 3, 7A(7)) using OCB mode liquid crystal ([0070], [0085]);

a driver (fig. 3(12,13)) applying a voltage to the liquid crystal layer ([0086]);

a liquid-crystal driving power supply supplying power to the driver ([0093]);

a switch (fig. 3(15)) outputting an on/off signal to the driver ([0088]); and

when an off signal (voltage pulse, [0087]) is output from the switch, the driver (fig. 3(12,13)) applies a predetermined voltage which can be applied to each of pixels of the liquid crystal layer for a predetermined time ([0087] – [0088]) and after the elapse of the predetermined time, stops the supply of power to the driver from the liquid-crystal driving power supply (figs. 2, 3, [0086] – [0089], [0103]).

As to claim 30, Hattori et al. teaches a liquid-crystal-display stopping method comprising:

inputting an OFF signal (voltage pulse, [0087]) to a driver (fig. 3(12,13)) of applying a voltage to a liquid crystal layer using OCM mode liquid crystal (fig. 3);

applying a predetermined voltage that can be applied to each pixel of the liquid crystal layer by the driver for a predetermined time when the OFF signal is input ([0087] – [0088]); and

stopping supply of power to the driver from a liquid crystal driving source supplying power to the driver after the predetermined period elapses (fig. 2, [0086] – [0089], [0103]).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 17, 18, 19, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hattori et al.** (US Pub. 2001/0020925).

As to claim 2, Hattori et al. discloses a liquid crystal display apparatus where a pixel electrode to which an individual voltage is applied with respect to each pixel and an opposed electrode arranged opposite to each pixel electrode are disposed on the liquid crystal layer (fig. 3) and

application of a voltage to each of the pixels is performed between the pixel electrode and the opposed electrode (fig. 2, [0086] – [0089]).

Hattori et al. does not specifically teach whether the predetermined voltage is a voltage equal to or higher than a critical voltage of OCB mode liquid crystal.

However, it is obvious for the display device of Hattori et al. to apply a predetermined voltage that is a voltage equal to or higher than a critical voltage of OCB mode liquid crystal to complete faster transition between splay and bend orientation in order to reduce afterimage.

As to claim 17, Hattori et al. teaches a liquid crystal display apparatus wherein the voltage to be applied to each of pixels is an alternating voltage ([0046], [0087]).

As to claims 18 and 19, Hattori et al. teaches a liquid crystal display apparatus wherein the predetermined voltage is a uniform voltage for each of the pixels ([0046],

[0087]).

As to claim 28, Hattori et al. discloses a liquid crystal display apparatus comprising:

a liquid crystal layer using OCB mode liquid crystal (fig. 3), in which a pixel electrode to which an individual pixel voltage is applied with respect to each pixel ([0086] – [0089]) and an opposed electrode arranged opposite to the pixel electrodes are disposed (figs. 3, 5, [0109]), wherein

a non-voltage region having no voltage applied to the opposed electrode is formed for each pixel in a region adjacent to a region where the pixel electrode and the opposed electrode are opposed to each other in the liquid crystal layer (figs. 5, 7, [0109]).

Hattori et al. does not specifically teach a size of the non-voltage region is such that even if the liquid crystal layer becomes bend orientation, at least a part of the region can maintain splay orientation.

However, it is obvious to make a liquid crystal display apparatus with a size of the non-voltage region is such that even if the liquid crystal layer becomes bend orientation, at least a part of the region can maintain splay orientation for certain application ([0092]).

As to claim 29, it is a design choice to make a liquid crystal display apparatus wherein a size of the non-voltage region is $400\mu\text{m}^2$ or more.

12. Claims 3-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hattori et al.** (US Pub. 2001/0020925) in view of **Ohta et al.** (US Pub. 2002/0149549).

As to claim 8, Hattori et al. discloses a liquid crystal display apparatus where when an off signal is output from the switch the driver applies a voltage for predetermined time (fig. 2, [0086] – [0089], [0103]).

Hattori et al. does not explicitly teach a liquid crystal display apparatus wherein when an off signal is output from the switch, the driver applies a voltage higher than a voltage at which substantially black is displayed on a display face.

Ohta et al. teaches a display device where predetermined voltage is applied in order to have black and white display to the pixels (figs. 12, 15, 16, [0010], [0015]).

Therefore, it is obvious to one skill in the art at the time of the invention was made to use the idea of applying a predetermine voltage to get black and white display of Ohta et al. into the display apparatus of Hattori et al. to make a liquid crystal display apparatus wherein the driver applies a voltage higher than a voltage at which substantially black is displayed on a display face and equal to or lower than a maximum voltage which can be applied to the liquid crystal layer, to each of pixels of the liquid crystal layer for predetermined time instead of applying the predetermined voltage to each of the pixels and after the elapse of the predetermined time, applies a voltage at

which substantially black is displayed on the display face, after the voltage at which substantially black is displayed on the display face is applied, applies a voltage at which substantially white is displayed on the display face, and after the voltage at which substantially white is displayed is applied, stops the supply of power to the driver from the driving power supply.

As to claim 3, Hattori et al. (as modified by Ohta et al.) teaches a liquid crystal display apparatus wherein the predetermined voltage is a voltage at which substantially black is displayed on a display face (figs. 12, 15, 16, [0010], [0015], in Ohta et al.).

As to claim 4, Hattori et al. (as modified by Ohta et al.) teaches a liquid crystal display apparatus wherein when an off signal is output from the switch, the driver applies a voltage at which substantially black is displayed on a display face to each of pixels of the liquid crystal layer and then, applies a voltage at which substantially white is displayed on the display face, and then stops the supply of power to the driver from the liquid-crystal driving power supply (figs. 12, 15, 16, [0010], [0015], in Ohta et al.).

As to claim 5, Hattori et al. (as modified by Ohta et al.) teaches a liquid crystal display apparatus wherein when an off signal is output from the switch, the driver applies a voltage higher than a voltage at which substantially black is displayed on a display face, to each of pixels of the liquid crystal layer for predetermined time instead of applying a predetermined voltage to each of the pixels and after the elapse of

predetermined time, stops the supply of power to the driver from the liquid-crystal driving power supply (figs. 12, 15, 16, [0010], [0015], in Ohta et al.).

As to claim 6, Hattori et al. (as modified by Ohta et al.) teaches a liquid crystal display apparatus wherein when an off signal is output from the switch, the driver applies a voltage higher than a voltage at which substantially black is displayed on a display face, to each of pixels of the liquid crystal layer for predetermined time instead of applying the predetermined voltage to each of the pixels and after the elapse of the predetermined time, applies a voltage at which substantially white is displayed on the display face to each of the pixels, and then stops the supply of power to the driver from the liquid-crystal driving power supply (figs. 12, 15, 16, [0010], [0015], in Ohta et al.).

As to claim 7, Hattori et al. (as modified by Ohta et al.) teaches a liquid crystal display apparatus wherein after the elapse of predetermined time, a voltage at which substantially black is displayed on a display face is applied instead of applying the voltage at which substantially white is displayed on the display face (figs. 12, 15, 16, [0010], [0015], in Ohta et al.).

As to claims 9-12, Hattori et al. (as modified by Ohta et al.) teaches a liquid crystal display apparatus wherein the voltage at which substantially white is displayed on the display face represents that a voltage between the opposed electrode and the pixel electrode, and a voltage between a gate line and the pixel electrode or a voltage

between the pixel electrode and an electrode other than the pixel electrode are substantially zero (figs. 12, 15, 16, [0010], [0015], in Ohta et al.).

As to claims 13-16, Hattori et al. (as modified by Ohta et al.) teaches a liquid crystal display apparatus comprising: a backlight connected to the liquid-crystal driving power supply to irradiate the liquid crystal layer, wherein when an off signal is output from the switch, irradiation from the backlight is stopped simultaneously when or before a predetermined voltage is applied to each of pixels of the liquid crystal layer from the driver (figs. 12, 15, 16, [0010], [0015], in Ohta et al.).

6. Claims 20-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hattori et al.** (US Pub. 2001/0020925) in view of **Yamakita et al.** (US Pub. 2002/0145579).

As to claim 20, Hattori et al. discloses a liquid crystal display apparatus wherein the liquid crystal layer is provided with a pixel electrode which is connected to the driver and to which a pixel voltage is supplied and a specific electrode which is connected to the driver, to which a voltage different from the pixel voltage is supplied (figs. 3, 6, [0086]), and

which is disposed via a dielectric so as to be opposed to the pixel electrode, the pixel electrode is disposed so that at least a part of the contour of the pixel electrode is not vertical to the oriented direction of the OCB mode liquid crystal (fig. 7, [0017]).

Hattori et al. does not explicitly teach a display device where the driver generates an electric field in a direction different from the oriented direction of the OCB mode liquid crystal ([0036]).

Therefore, it is obvious to one skill in the art at the time of the invention was made to combine the display device of Yamakita et al. with the display apparatus of Hattori et al. to make a liquid crystal display apparatus wherein when an off signal is output from the switch, the driver generates an electric field in a direction different from the oriented direction of the OCB mode liquid crystal between the pixel electrode and the specific electrode and after the elapse of predetermined time, stops the supply of power to the driver from the liquid-crystal driving power supply.

As to claim 21, Hattori et al. (as modified by Yamakita et al.) teaches a liquid crystal display apparatus wherein the contour of the pixel electrode includes a first portion which generates an electric field not vertical to the oriented direction of the OCB mode liquid crystal but in a direction of twisting a part of the oriented-directional liquid crystal in one direction in a pixel and a second portion which generates an electric field in a direction of twisting another part of the oriented-directional liquid crystal in other direction ([0036], in Yamakita et al.).

As to claim 22 Hattori et al. (as modified by Yamakita et al.) teaches a liquid crystal display apparatus according to claim 21, wherein the first portion and the second portion are substantially parallel with the oriented direction of the OCB mode liquid

crystal and alternately continuously formed ([0036], in Yamakita et al.).

As to claim 23, it is obvious for the liquid crystal display device of Hattori et al. (as modified by Yamakita et al.) to have an opposed electrode arranged opposite to each of the pixel electrodes is further disposed on the liquid crystal layer, when an off signal is output from the switch, the driver applies a voltage for substantially white display on a display face, between each of the pixel electrodes of the liquid crystal layer and the opposed electrode, thereafter, stops the supply of power to the driver from the liquid-crystal driving power supply.

As to claim 24, it is obvious for the liquid crystal display device of Hattori et al. (as modified by Yamakita et al.) when an off signal is output from the switch, the driver applies a predetermined voltage equal to or higher than a critical voltage of the OCB mode liquid crystal but equal to or lower than the maximum voltage which can be applied to the liquid crystal layer to each of pixels of the liquid crystal layer, thereafter, applies a voltage for substantially white display on a display face, thereafter stops the supply of power to the driver from the liquid-crystal driving power supply.

As to claim 25, Hattori et al. (as modified by Yamakita et al.) teaches a liquid crystal display apparatus wherein an electric field in a direction different from the oriented direction of the OCB mode liquid crystal is applied simultaneously when or after

the voltage for white display on the display face is applied ([0036], in Yamakita et al.).

As to claim 26, Hattori et al. (as modified by Yamakita et al.) discloses a liquid crystal display apparatus wherein two pixel electrodes adjacent in the oriented direction of the OCB liquid crystal mode are arranged on the specific electrode via a dielectric, and contours of the two pixel electrodes are arranged so that they are not vertical to the oriented direction of the OCB mode liquid crystal and include a first portion of generating an electric field in a direction of twisting a part of the oriented-directional liquid crystal in one direction in a pixel and a second portion of generating an electric field in a direction of twisting another part of the oriented-directional liquid crystal in other direction ([0036], in Yamakita et al.).

As to claim 27, Hattori et al. (as modified by Yamakita et al.) teaches a liquid crystal display apparatus wherein the driver applies voltages having phases opposite to each other to the two pixel electrodes (fig. 7, [0006]).

Response to Arguments

7. Applicant's arguments filed **August 1st, 2008** have been fully considered but they are not persuasive.

JP References without English references in IDS filed on March 18, 2005 are not considered. At least English Abstract of those references should be provided in order to consider those references.

On the third page of Remarks, 4th paragraph, Applicants' states, "... **Hattori are not directed to an operation when an off signal is output from a switch ...**". The Examiner respectfully disagrees to this assertion. Hattori clearly teaches off signal (voltage pulse, [0087]) that is output from a switch (fig. 3, [0086] - [0089]). Hattori teaches a driver (fig. 3(12, 13)) that applies a predetermined voltage to each of the pixels of the liquid crystal layer for a predetermined period of time ([0086] – [0089]).

On the fourth page of Remarks, 2nd paragraph, Applicants' asserts that **"the non-voltage region"** structure is not suggested by Hattori. The Examiner again respectfully disagrees to this statement. Hattori teaches that a transition can be induced by providing liquid crystal molecule orientation in one area different than other area [0092]. Therefore, it is obvious to have "non-voltage region" in order to perform such transition.

8. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Afroza Y. Chowdhury whose telephone number is 571-270-1543. The examiner can normally be reached on 7:30-5:00 EST, 5/4/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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11/17/2008

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